Basalt (Volcano Rock) Concrete Guide

Criteria, industrial manufacturing, and integration specifications for non-corrosive concrete reinforcement.

1. Industrial Manufacturing Process

01 Recreating Lava On-Demand

- **Quarrying Selection:** Natural basalt rock with consistent high-silica and low-iron content is mined.
- **Controlled Melting:** Crushed rock is melted down in industrial furnaces at 2,700°F to 2,700°F+ (1,400°C - 1,500°C) into liquid magma state.
- **Extrusion & Pultrusion:** Molten rock is drawn through fine nozzles into continuous fibers and bound with polymer resin to form high-strength structural rebar (BFRP).

2. Material Advantages

02 Performance Criteria

- **Zero Iron / Zero Rust:** Completely non-metallic, eliminating internal concrete spalling and structural erosion caused by moisture or salt intrusion.
- **Thermal Match:** Expands and contracts at a rate nearly identical to concrete, preventing thermal stress micro-cracks.
- **High Tensile Strength:** Offers roughly 2.5x to 3x higher tensile strength than standard structural steel rebar.

3. Mix Integration & Application

03 Implementation Criteria

- **Structural Grid:** Replace traditional steel rebar grids with Basalt Fiber Reinforced Polymer (BFRP) rebar rods for foundations.
- **Micro/Macro Fibers:** Alternatively, mix chopped basalt or macro-synthetic fibers directly into the wet concrete pour for multi-directional crack control and impact resistance.